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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

COUNTRY USSR (Estonia)

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SUBJECT Power Supply Situation in 1944 and Probable Development

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THIS IS UNEVALUATED INFORMATION

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1. Prior to the second USSR occupation of Estonia there were various (1936, 1941 and 1943) power development schemes and two (1941 and 1944) almost complete destructions of the power generating facilities of the oil industry. This renders it rather difficult to reconstruct along what lines the USSR started to rebuild the power supply for the oil shale industry. 50X1-HUM It is obvious that the main Soviet interest in Estonia concentrates on:

   (a) The oil shale industry -
   to supply Leningrad with city gas,
   to produce oil shale and oil as fuel for industrial and power purposes,
   to produce asphalt as road building material,
   to utilize shale ash for slag concrete,
   and possibly to try to extract uranium from spent shale.

   (b) The availability of naval bases.

2. According to published plans, the USSR aimed at the transmission of 1.2 billion cubic meters of city gas to Leningrad in 1950. The transmission of this amount of gas requires about 186,000,000 kw-h which corresponds to a power output of at least 22,000 kw. The gas line to Leningrad (163 miles) started operation in 1948.

3. The available information concerning the intended expansion of the oil shale industry by the USSR is somewhat contradictory: according to some sources the five-year plan of 1945 aimed at a crude shale oil production of 715 thousand metric tons or about 4.68 million barrels per year by 1950; according to other sources the production of crude shale oil for

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1950 was to be one million metric tons or about 6.5 million barrels per year. Using an average figure of five million barrels per year and the specific power consumption of the various systems of carbonization, refineries, mines, gas production, worker settlements etc an annual electric power requirement of about 300,000,000 kw-h for the entire oil shale industry. This corresponds to a power output of roughly 50,000 kw provided the utilization factor is very favorable.

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4. There are at least two large naval bases in Estonia, one in Tallinn, the other in Paldisky. Tallinn has two shipyards dating from pre-World War I days, both are capable of building capital ships up to 30 thousand tons displacement. Apparently both these shipyards have been reactivated by the Soviets. Each of these yards has a connected load of about 40,000 kv-a. Adding other naval facilities arrive at approximately 65,000 kw total power requirements.

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5. Not far from the Estonian border is the huge USSR torpedo testing plant and school of Rutsji with a connected load of 60,000 kv-a.

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6. Finally there is the probably much neglected sector of civilian power requirements and consumption of various other industries in Northern Estonia. figure this to be at least 150,000,000 kw-h or corresponding to a power output of at least 30,000 kw.

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7. Thus the total power requirements for Northern Estonia may amount to:

Gas Transmission	22,000 kw
Oil Industry	50,000 kw
Naval Facilities	65,000 kw
Civilian and Other Industries	30,000 kw
15% Losses (station service, transmission, idling etc)	27,000 kw
Total	194,000 kw

8. Outside the oil industry the total installed generating capacity of this area amounted in 1944 to 40,000 kw, of which amount only 7,000 kw were installed in peat-burning steam stations, the remainder depending on fine shale or imported coal for steam generation. It is very unlikely that the USSR is importing coal from Silesia, the nearest source, and it is furthermore unlikely that the share of steam generating by peat combustion has increased to above 10,000 kw. Therefore assume that 30,000 kw are generated locally in power stations combusting fine shale and approximately 50,000 kw have to be transmitted from the oil shale area power system to Tallinn and vicinity in order to cover the requirements of that area. This is based on the above-mentioned demand of 65,000 kw for naval installations in the Tallinn area and on there not being an interconnection with the USSR power system. It is unlikely that the USSR is feeding power from its own network into the Estonian system because the power deficit in the USSR system was supposed to be chronic and not know of any natural power sources still available in the Leningrad oblast.

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50,000 and 70,000 kw for naval installations to be provided by the Estonian power system. assume between

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There have never been any publications concerning the power supply of the northwestern part of the RSFSR, let alone the oil shale industry after 1945. Therefore the only reasonable way seems to establish an analysis of probable requirements and most likely remainders of the installations of the German era in order to arrive at an ultimate layout and a discussion of time factors in order to arrive at factual accomplishments as of now (1953).

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9. The above figures lead to the conclusion that the power plants of the oil shale district must have a generating capacity of approximately 154,000 kw to cover the demand as prescribed by the five-year plan. According to the German Expansion Program of 1941-43 the following generating units were to be installed in the oil industry:

Slantsy 3•3•2.75	8,750 kw
Ahtme 4x10	40,000 kw
Kohtla Jarve 4x1.5	6,000 kw
Pussi 1.6•2.2•6•15	24,800 kw
Kivioli 6•6•5	17,000 kw
Total	96,550 kw

154,000 kw minus 96,550 kw results in a deficit of generating capacity of 57,000 kw which hardly can be covered by additional steam stations in the oil industry. It is therefore very likely that the USSR developed, or at least intends to develop the Narva River Hydro Station which would give up to 54,000 kw and thus make the power demand and generation balance. (The tiny deficit of some 3,500 kw is negligible in this kind of an estimate.) The main reason for not having developed the Narva Hydro station years earlier was the strategically exposed location at the Estonian eastern frontier and the tense political situation. Technically all plans were made for a peak utilization by means of three turbines with generators of 17,500 or 18,000 kw each.

10. The above power demand considerations [redacted] conclude with a great degree of probability that the USSR started to rebuild the oil shale power supply basically along the lines of the German Expansion Program plus the construction of the new Narva Hydro station. This assumption is furthermore corroborated by the fact that the majority of the plans and calculations of the German era fell into the hands of the USSR, and finally by the certainty that even the extensive blastings of the retreating German forces did not succeed in destroying all heavy construction and other outlying equipment such as high tension lines etc.

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[redacted]

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11. On the other hand there are most certainly divergences from the German layout as shown. It is not probable that the USSR was interested in construction of an extensive high tension line for interconnection to Latvia, because the USSR interest centers apparently on the Estonian coast and Leningrad and is definitely not concerned with a high standard in agriculture and various minor industries which were essential for the independent republics of Estonia and Latvia. This high tension line was also not directly connected with the German plans for the oil shale industry, but all basic calculations for future construction were made.

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[redacted]

12. It is likely that the USSR has reversed the sizes of the power stations of Kohtla-Jarve and Pussi: the four small generators at Kohtla-Jarve were originally planned in light of a certain residue gas cycle and availability from a German firm; the fourth unit of the Pussi power station, a generator of 15,000 kw, was oversized, exceeded the cooling water available and was planned only because of its ready availability from some abandoned German power station. Since the output of the Kohtla-Jarve carbonization and gas plant has been increased by the Soviets and put on a different technological base, it is likely that the Kohtla-Jarve

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power station is larger. On the other hand [redacted] no reason for the USSR to re-establish the oversized unit at the Pussi power station. The Slantsy power station was outdated and inefficient. During the German development it was considered only as something like a standby for the rather small existing Narva Hydro station of 4,500 kw until the planned new Narva Hydro station of 54,000 kw materialized. [redacted] it fell almost intact into the hands of the advancing Soviets, therefore it is likely that the USSR has utilized it for the same purpose the Germans did.

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13. It is very difficult to evaluate how much has been actually accomplished up to date [1953] and how much is only a prescribed aim. The few articles in Soviet and USSR dailies concerning the grandiose development of the oil shale industry are not functional and are written as propaganda. The prescriptions of a five-year plan are usually far-flung and unrealistic "musts." However it seems obvious that this oil industry is of prime importance to the planned economy of at least the northwestern part of the USSR. It appears to be a fact that two gas producer plants have been operating for some time, that city gas has been transmitted to Leningrad since 1948 or 49, that the oil shale mines are producing full blast, that at least Kohtla Jarve is carbonizing shale at a rate surpassing the German rated capacity, that plenty of fine shale is available for combusion purposes and that by now the power line to Tallinn should be in operation. This permits the conclusions that up to now at least the Ahtme power station is on the line with three or even four generators, Kohtla Jarve has some considerable power generation, and that the Kivioli and Pussi power plants have at least half the originally planned power output. A new oil shale plant at Uhtna Kabala was mentioned in one of the five-year plans.

50X1-HUM

[redacted] Concerning the Narva Hydro station [redacted] it is still at least partially under construction because of the very extensive structural preparations required for this type of power station. This means that the steam power stations must have been reconstructed extensively to cover the demand.

[redacted]

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-end-

[redacted]

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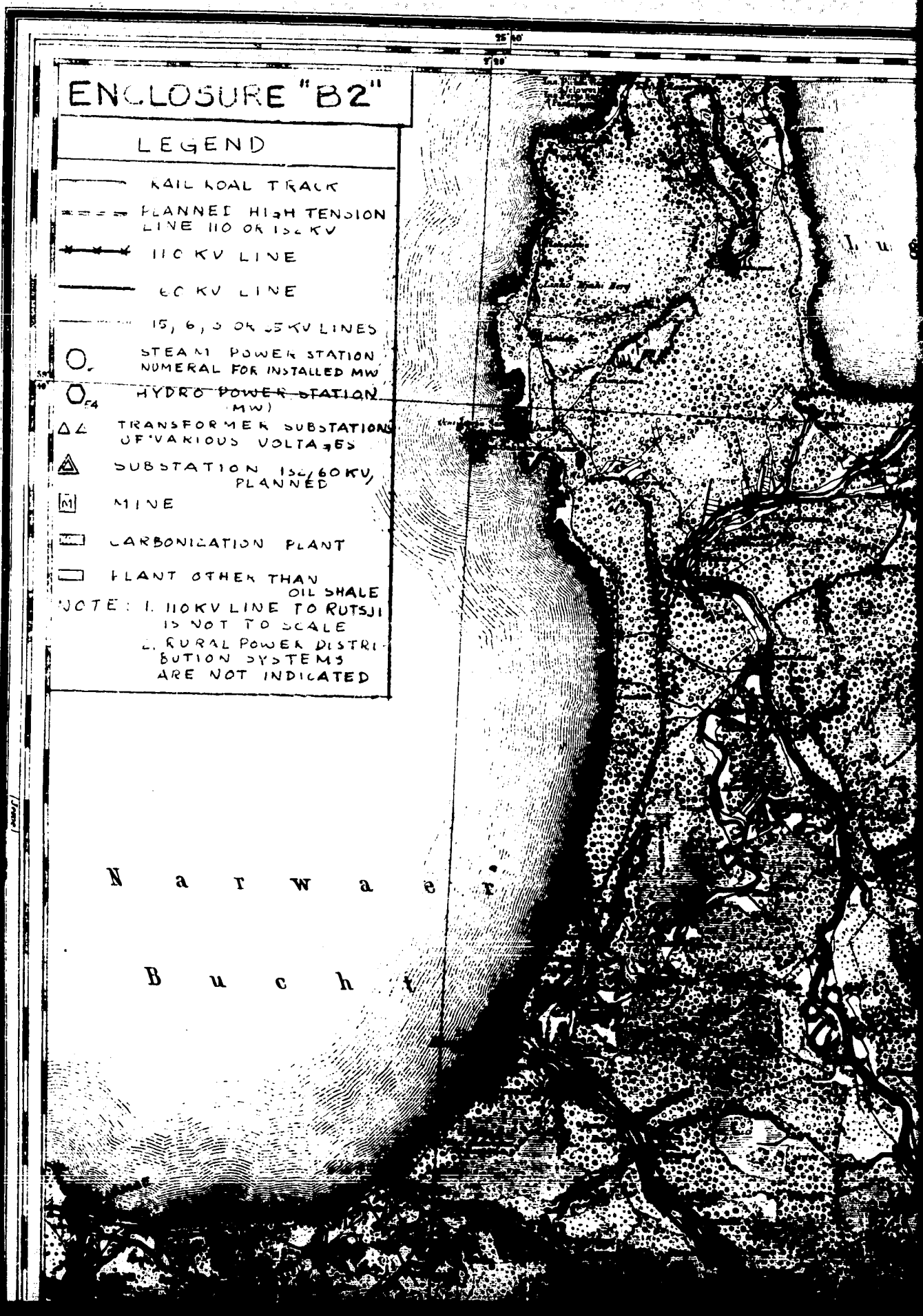

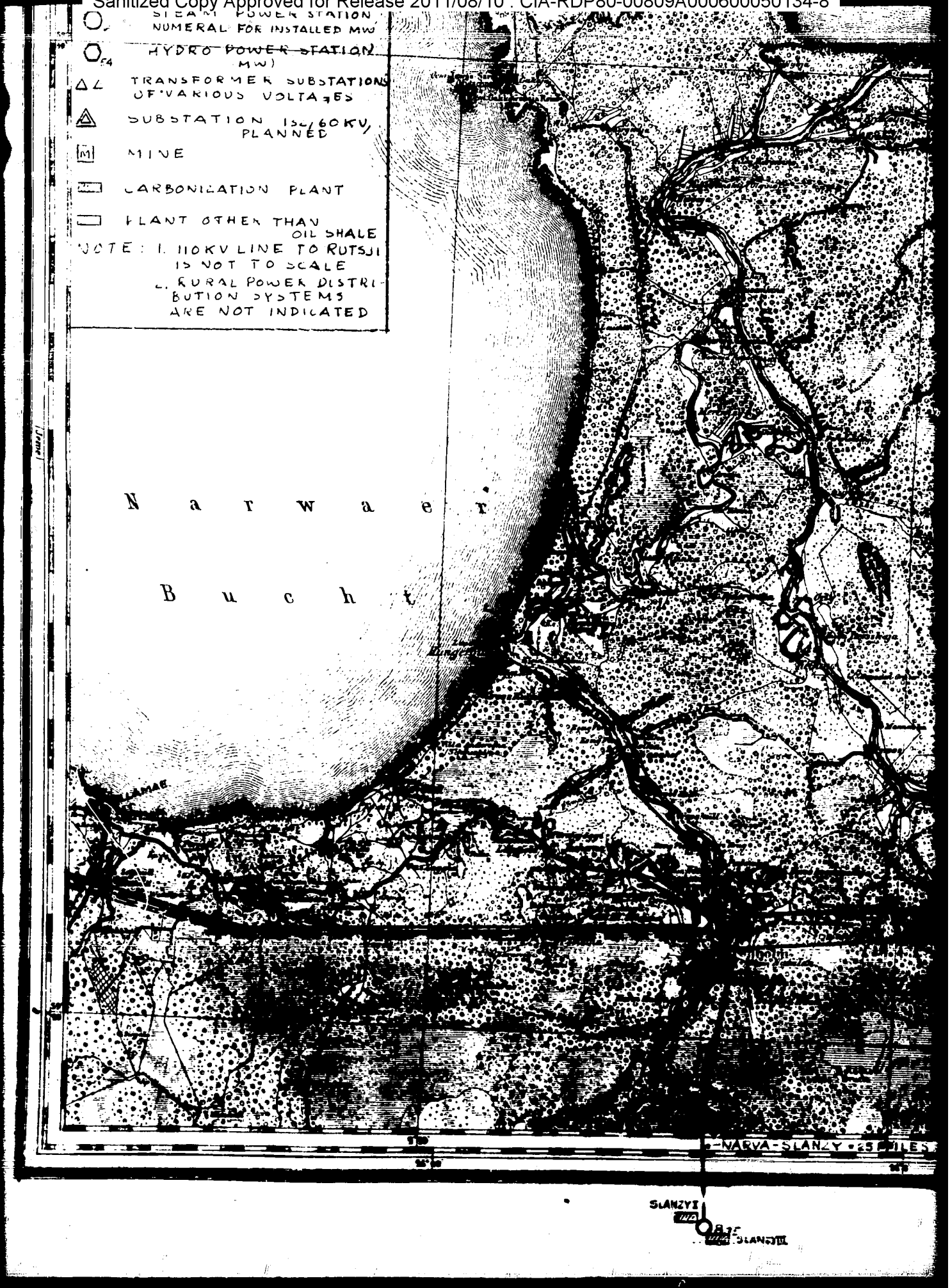

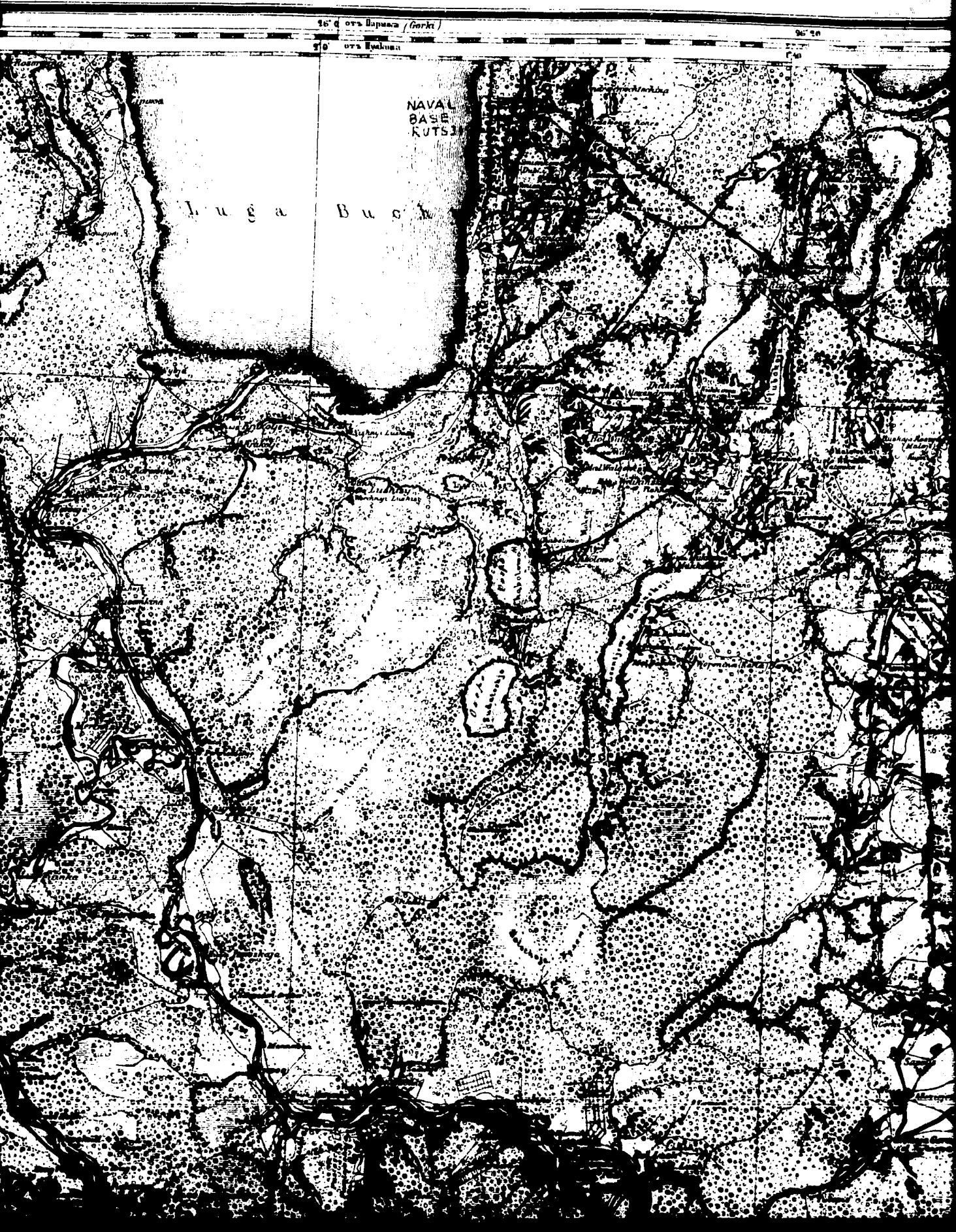

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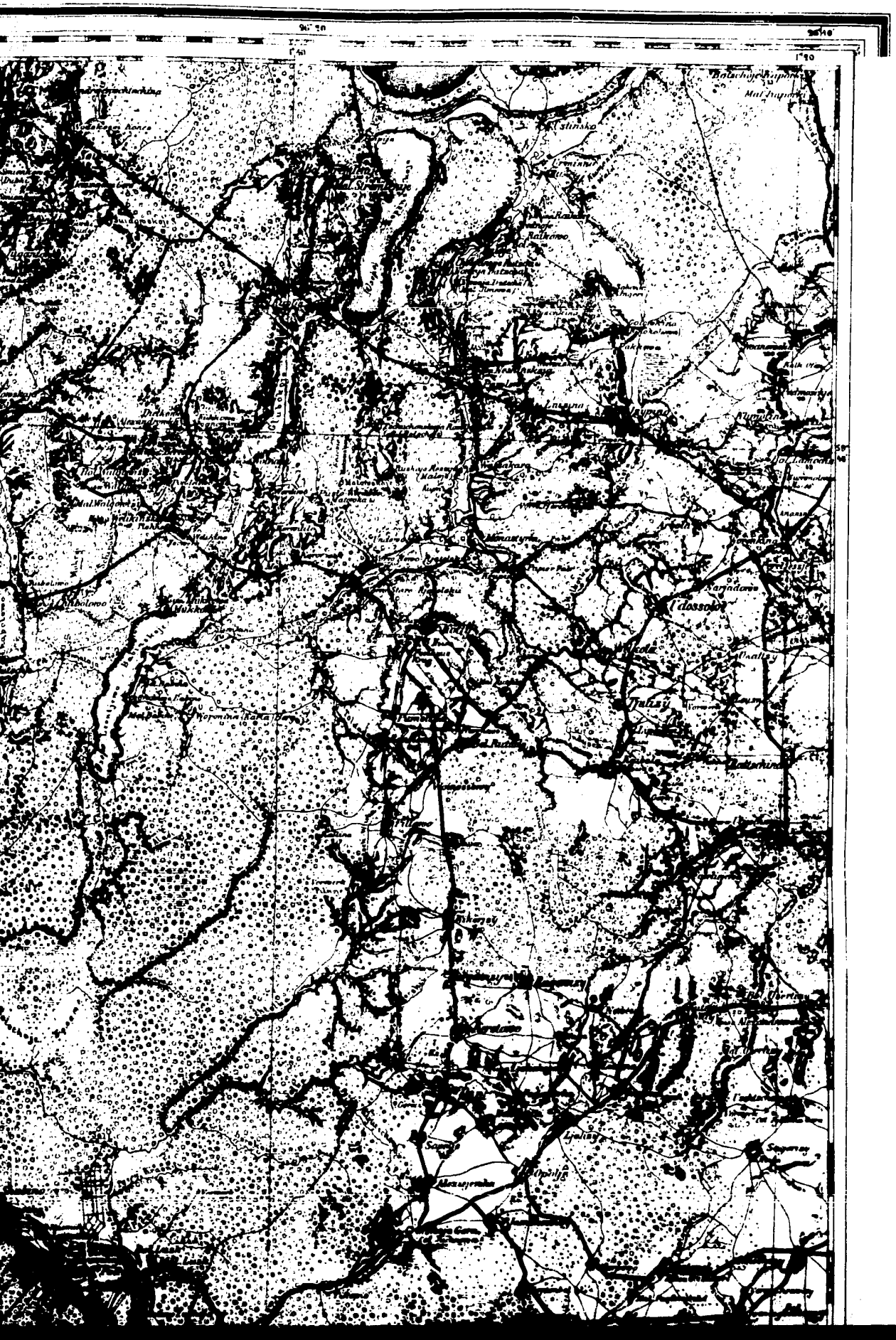

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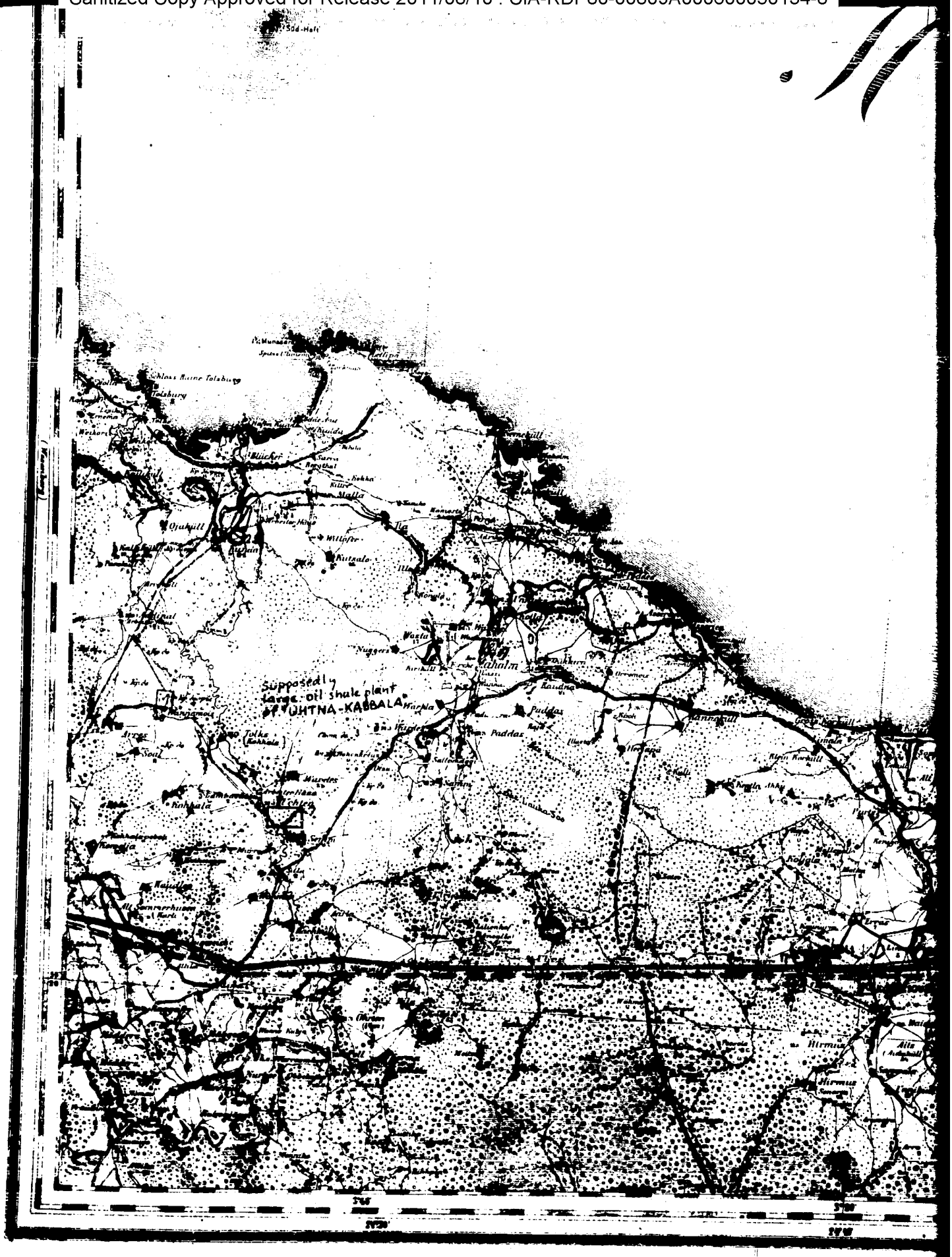

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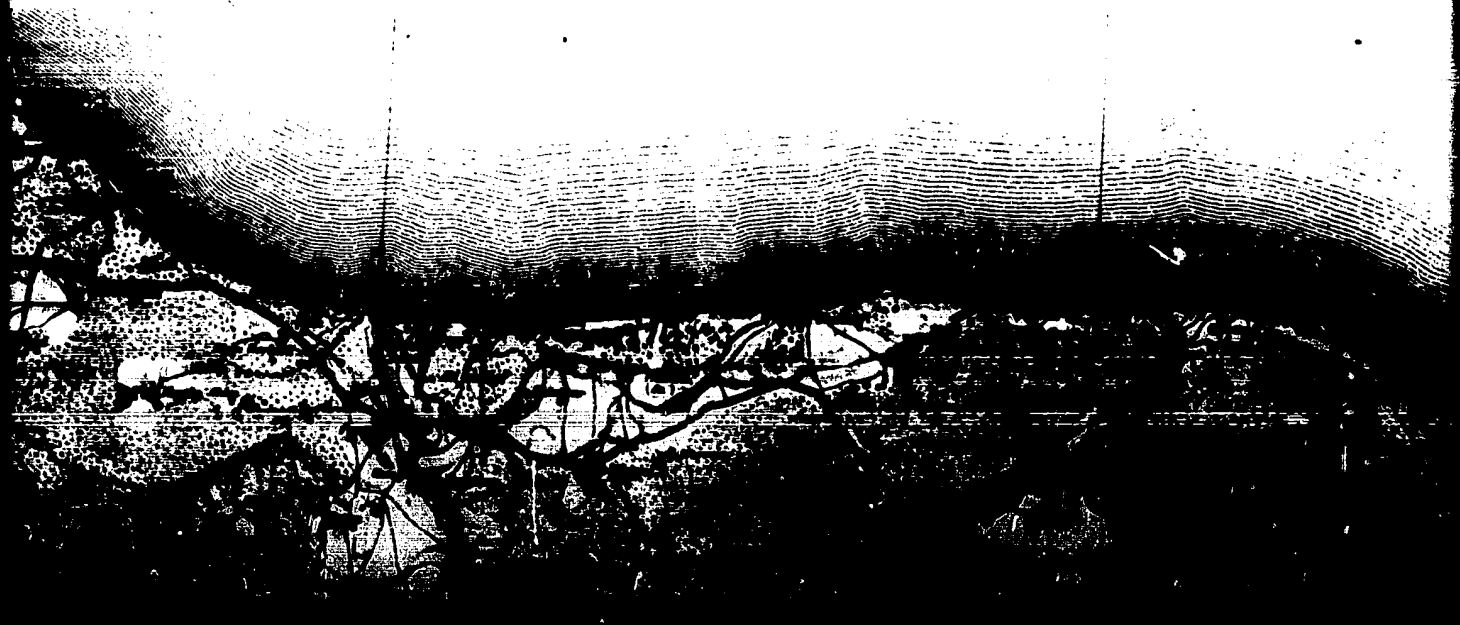
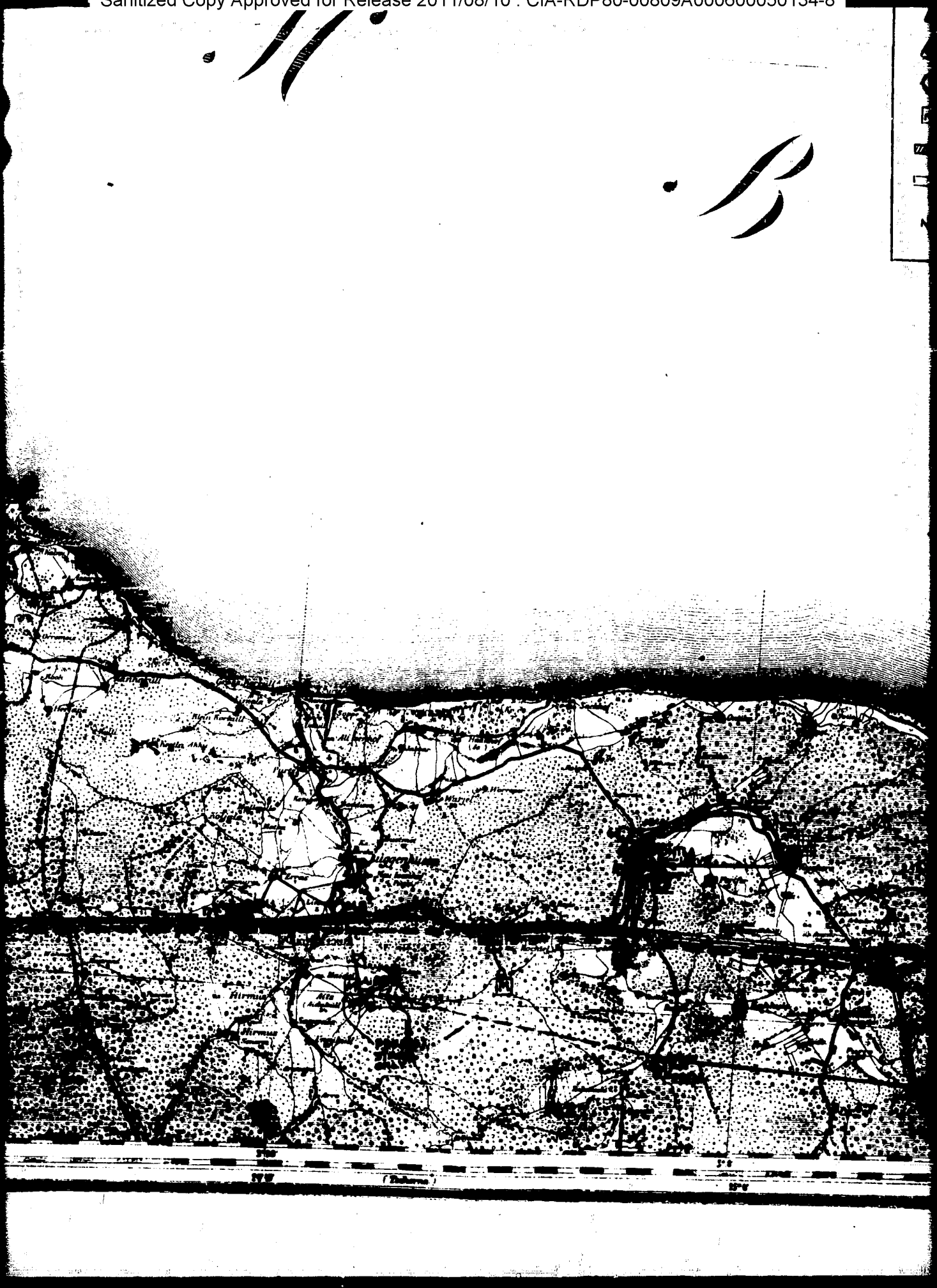
ENCLOSURE "B1"





ENCLOSURE "B1"

LEGEND

- RAILROAD TRACK
- PLANNED HIGH TENSION LINE 110 OR 132 KV
- 60 KV LINE
- 15 KV, 6 KV OR 3 KV LINES
- O_6 STEAM POWER STATION NUMERAL FOR INST'D MW
- $\Delta\Delta$ TRANSFORMER SUBSTATIONS OF VARIOUS VOLTAGES
- SUBSTATION 132/60 KV, PLANNED
- O_{54} HYDRO POWER STATION NUMERAL FOR INST'D MW
- M MINE
- CARBONIZATION PLANT
- PLANT OTHER THAN OIL SHALE

NOTE: RURAL POWER DISTRIBUTION SYSTEMS NOT INDICATED

60 KV LINE

15 KV, 6 KV OR 3 KV LINES

O_6 STEAM POWER STATION
NUMERAL FOR INST'D MW

△△ TRANSFORMER SUBSTATIONS
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